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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,882	06/30/2006	Hanno Tautz	LINDE-0637	3893
23599 7590 05/09/2008 MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201				
EXAMINER PEREIRO, JORGE ANDRES				
ART UNIT		PAPER NUMBER		
4147				
MAIL DATE		DELIVERY MODE		
05/09/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,882

**Applicant(s)**

TAUTZ, HANNO

**Examiner**

JORGE PEREIRO

**Art Unit**

4147

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/US)  
Paper No(s)/Mail Date 01/17/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "diffusor" claimed in claim 13 and the "cylindrical tubular insulation" claimed in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

#### **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

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- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the

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invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

2. The disclosure is objected to because of the following informalities: On page 5 of the specification the second to last line states that a "preliminary vane 7 is mounted on the inside tube" but according to the figure the preliminary vane 7 is mounted on the outer annulus (1). Appropriate correction is required.

### ***Claim Objections***

3. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 3 only claims that the material is alloyed with aluminum but claim 1 already claims an aluminum-containing material.

4. Claim 4 is objected to because of the following informalities: The phrase "ODS material" should not appear in parenthesis unless applicant is referring to a reference character in the drawings. Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m). Appropriate correction is required.

5. Claims 13 and 14 are objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 13 and 14 contains subject matter which

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was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 13 and 14 both refer to a combustion chamber which is not described. The examiner suggests changing the phrase "combustion chamber" to "combustion zone."

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 13 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 13 and 14 both refer to a combustion chamber which is not described.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

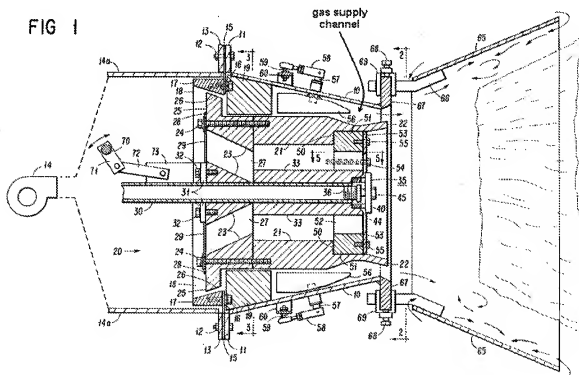
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.



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9. Claims 1, 5-13 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,600,377 to Musil ("Musil").

10. In re claim 1, with reference to figure 1 below, Musil discloses a burner with a burner head (see column 2, line 32) and gas supply channels (27) that are located in the burner head, characterized in that the burner head, at least in the area of the exit ends of the gas supply channels, consists of an aluminum-containing material (21) (also see column 2, lines 48-51).



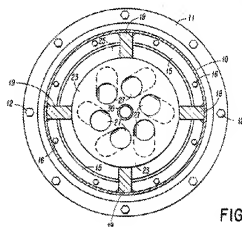
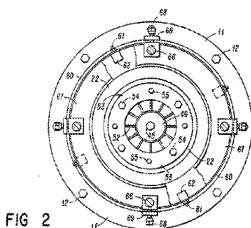
11. In re claim 5, with reference to figure 1 above, Musil discloses wherein in at least one of the gas supply channels, there is a vane (56) that stabilizes the gas flow.

12. In re claim 6, with reference to figure 1 above, Musil discloses wherein the vane (56) is set back relative to the exit ends (22, 67) of the gas supply channels.

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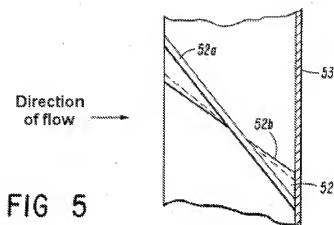
13. In re claim 7, with reference to figure 1 above, Musil discloses wherein the incline of the vane (56) is adjustable (see column 3, lines 52-68).

14. In re claim 8, with reference to figure 1 above and figures 2 and 3 below, Musil discloses wherein the gas supply channels (27, 30) are made from gas supply tubes that are arranged coaxially to one another.



15. In re claim 9, Musil discloses wherein there are means (52, 56) for producing a swirl flow in the gas supply channels (see column 4, lines 17-20).

16. In re claim 10, with reference to figure 5 below, Musil discloses wherein the means (52) for producing a swirl have flow channels that are tilted tangentially against the direction of flow (see column 3, lines 25-46).



17. In re claim 11, Musil discloses wherein the means (56) for producing a swirl in the gas supply channels are adjustable in order to produce swirl flows of varied intensity (see column 3, line 52 through column 4, line 3).
18. In re claim 12, Musil discloses wherein in the outside area, the burner has means for cooling by a vapor flow (see column 5, lines 11-24).
19. In re claim 13, with reference to figure 1 above, Musil discloses wherein the burner is shielded against heat radiation toward the combustion chamber side by a diffusor (65).

***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Musil in view of US Patent Application Publication 2002/0079023 A1 to Alstrup et al. ("Alstrup").

23. In re claim 2, Musil discloses all of the claim limitations except for wherein the material is coated with aluminum or an aluminum alloy.

24. However, Alstrup discloses a method for enhancing the protection of high temperature alloys containing iron, nickel and chromium and/or aluminum against high temperature corrosion by carburization or metal dusting is achieved by depositing a thin layer of a metal selected from one or more of the noble metals, precious metals, metals from groups IVA, IVB, and group VA, VB of the Periodic Table and mixtures thereof (see page 1, paragraphs [0009-0012]).

25. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Musil by coating the burner with aluminum or an aluminum alloy as taught by Alstrup, since such a modification would protect against high temperature corrosion by carburization or metal dusting.

26. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Musil in view of US Patent 5,422,070 to Nazmy et al. ("Nazmy").

27. In re claim 3, Musil discloses all of the claim limitations except for wherein the material is alloyed with aluminum.

28. However, Nazmy discloses that oxidation-resistant and corrosion-resistant alloys based on doped iron aluminide ( $\text{Fe.sub.3 Al}$ ) can be used in those thermally highly stressed parts which are exposed to oxidizing and/or corrosive actions (see column 1, lines 9-13).

29. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Musil by alloying the burner material with aluminum as taught by Nazmy, since such a modification would provide oxidation and corrosion resistance and at the same time, the alloy can be produced very economically by casting or by casting and rolling (see Nazmy, column 1, lines 30-50).

30. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Musil in view of Nazmy and further in view of US Patent 4,820,124 to Fried ("Fried").

31. In re claim 4, Musil in view of Nazmy discloses all of the claim limitations except for wherein the material consists of an oxide dispersion-hardened superalloy (ODS material).

32. However, Fried discloses that oxide-dispersion-hardened nickel-based superalloys have been proposed as blading materials for highly loaded gas turbines because they permit operating temperatures which are higher than those of conventional cast and forged superalloys (see column 1, lines 55-60).

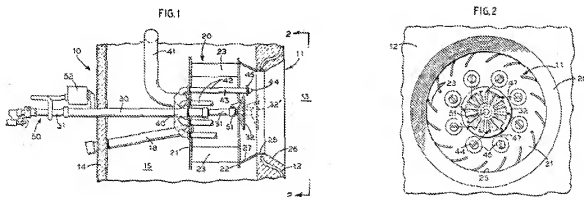
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33. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Musil in view of Nazmy and further in view of Fried by constructing the burner of Musil out of an oxide dispersion hardened superalloy, since such a modification would permit operating temperatures which are higher than those of conventional cast and forged superalloys.

34. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Musil in view of US Patent 3,349,826 to Poole et al. ("Poole").

35. In re claim 14, Musil discloses all of the claim limitations except for wherein the burner is shielded against heat radiation toward the combustion chamber side by cylindrical tubular insulation.

36. However, with reference to figures 1 and 2 below, Poole discloses a burner shielded against heat radiation (see column 3, lines 30-33) toward the combustion chamber side by cylindrical tubular insulation (25, 26).



37. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Musil in view of Poole by shielding the burner against heat radiation (see column 3, lines 30-33) toward the combustion chamber side

by incorporating a cylindrical tubular insulation (25, 26) since such a modification would provide further corrosion-resistance particularly at the high combustion temperatures encountered by burner heads.

### ***Conclusion***

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6511312 B2 to Primdahl discloses a swirler burner. US 6502399 B2 to Mandai et al. discloses a three-dimensional swirler in a gas turbine combustor. US 6474569 B1 Brundish et al. discloses a fuel injector including a combustion air flow conduit, a fuel inlet and, swirlers to mix the air and fuel flowing therethrough. US 6349714 B1 to Hurley et al. discloses a burner for a heat supplying device includes a substrate of thermally insulating material. US 6123542 A to Joshi et al. discloses a self-cooled oxygen-fuel burner for use in high-temperature and high-particulate furnaces. US 5573396 A to Swanson discloses a low emissions burner. US 5392720 A to Briggs et al. discloses a flame retaining nozzle tip. US 5351477 A to Joshi et al. discloses a dual fuel mixer for gas turbine combustor. US 5257927 A to Lang discloses a low NO<sub>x</sub> burner. US 5251447 A to Joshi et al. discloses an air fuel mixer for gas turbine combustor. US 5168796 A to Porton et al. discloses a cooking device. US 4675204 A to Nicoll et al. discloses a method of applying a protective layer to an oxide dispersion hardened superalloy. US 4604052 A to Brown et al. discloses a dual-water mixture fuel burner. US 4479442 A to Itse et al. discloses a

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venturi burner nozzle for pulverized coal. US 4298337 A to Butler et al. discloses a fuel burner having flame stabilization by internal recirculation. US 3915387 A to Caruel et al. discloses fuel injection devices. US 3859935 A to Walker discloses a burner mountable in a furnace wall. US 3697000 A to Giberson, Jr. discloses a gas burner for use with kilns, furnaces, and the like.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JORGE PEREIRO whose telephone number is (571) 270-3932. The examiner can normally be reached on Mon.-Fri. 9:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on 571-272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jorge Pereiro  
Examiner  
Art Unit 4147

/Ninh H. Nguyen/  
Primary Examiner, Art Unit 3745  
05/05/08